**III. Project Services**

The GREAT MINDS Project is designed around three primary goals which establish a breadth of services to meet the needs of all participants: P-12 students, in-service teachers, and pre-service teachers; global higher education, business, and government partners; and nationally renowned P-12 educators, as well as UWA faculty. These services will specifically be accessible to all West Alabama area P-12 students, in-service teachers, and pre-service teachers. Efforts to make the GREAT MINDS Project available to the West Alabama target population include: providing transportation for P-12 students to the summer camps; offering the summer camps at no charge to the P-12 students who attend; furnishing stipends for teachers to attend the professional development week of camp and the week of teaching students at summer camp; providing funds for substitute teachers so in-service teachers can attend professional development during the school year; giving vouchers for science or math hands-on kits for teachers to take back to their classroom; and providing funds for national journals, registration and travel to STEM conferences, and STEM field trips for pre-service teachers.

The GREAT MINDS Project will serve the West Alabama community, which is composed of a majority of Black American and low-income students, by establishing a GREAT MINDS International Consortium to provide local pre-service and in-service teachers with best practices in STEM and hands-on learning, by providing on-going professional development for local teachers in the areas of STEM, by providing summer STEM camps for students from the West Alabama community, and by recruiting and retaining male and female Black American students in the teacher education program at UWA by supporting this population through faculty mentoring, service learning experiences, and exposure to global teaching and learning.

**GOAL 1: GREAT MINDS International Consortium**

First, the College of Education (COE) will establish the GREAT MINDS International Consortium by inviting partner institutions of higher education and P-12 education from China, South Korea, the United Kingdom, and Finland to participate in synchronous and asynchronous classroom discussions, to contribute to teaching and learning videos, and to share best practice lessons in STEM with faculty members, pre-service teachers, graduate students, and in-service teachers at UWA. This international collaboration is established through a UWA telepresence classroom outfitted with Cisco communication hardware and software to allow for real-time communication with higher education and P-12 classrooms around the globe. UWA will also outfit six of its COE classrooms with flat-screen monitors, cameras, and microphones to create opportunities for video exchanges with partner institutions in COE courses. A video and podcast repository of best practice lessons in STEM will be created using iTunes U. This conduit allows UWA faculty and students and the GREAT MINDS International Consortium partners to produce and share multimedia files in a user-friendly and universal format. Another component of the GREAT MINDS International Consortium is the International Summit on STEM Teaching and Learning to be held annually during the summer at UWA in Livingston. This conference has both face-to-face and virtual components including keynotes featuring STEM educators from across the United States and our international consortium partners, concurrent sessions presented by UWA professors and students and by professors and students from international institutions, and real-time and virtual poster sessions that showcase best practices in STEM lessons.

**GOAL 2: Develop and Implement STEM Curriculum--Development**

The second goal of the GREAT MINDS project is to develop and implement STEM curriculum in the training of both pre-service and in-service teachers and to address specifically critical thinking and problem solving skills. The GREAT MINDS project will recruit 40 in-service teachers from the University of West Alabama service region and create a professional learning community (PLC) for the development and implementation of STEM lessons into area P-12 classrooms. The GREAT MINDS PLC brings together a cohort of teachers dedicated to improving STEM instruction in the West Alabama area. Teachers interested in the GREAT MINDS project must submit a completed application to the application committee which consists of the GREAT MINDS key personnel. The application requires teachers to submit a current resume, an essay explaining the importance of STEM education, and a personal interview with the committee. In addition, requirements to participate include (1) teachers must have a master’s degree in Teacher Education, (2) teachers must teach STEM subjects in grades P-12, and (3) teachers must teach in a P-12 school in the West Alabama service region. Applications to participate in the GREAT MINDS project are accepted each year in September and the annual cohort is notified by October 15 of each year. By focusing the application process on teachers in the West Alabama region, the GREAT MINDS PLC will influence the classroom instruction of STEM subjects.

During the school year, teachers chosen to be in the GREAT MINDS PLC are invited to the UWA campus twice a semester (four times during the academic year) to participate in high-quality, research-based professional development activities in the areas of STEM, technology integration, and 21st Century Pedagogy. The GREAT MINDS PLC provides funds for LEAs to hire substitutes for these professional development days. The GREAT MINDS PLC includes hands-on instruction using science kits and math manipulatives for P-12 students, technology instruction in creating online student projects in STEM subjects, and pedagogical instruction in developing critical thinking skills.

Upon completion of these four meetings, the participants in the PLC will attend a 5-day summer professional development camp. At the GREAT MINDS Teacher Camp, the teachers work with UWA faculty from the COE and the College of Natural Sciences and Mathematics to develop lesson plans utilizing hands-on, inquiry-based activities to develop critical thinking skills. Each summer the GREAT MINDS Teacher Camp focuses on a specific STEM topic selected by the GREAT MINDS project director. The topics for the annual camps include forensics and biological science, environmental science, the science of flight, and robotics; mathematics will be integrated into each science topic on an annual basis through the use of measurement, statistics, and data collection. During each camp, the teachers receive instruction from STEM professionals as well as education professors in order to gain an in-depth knowledge of the STEM topic selected. The participants in the GREAT MINDS Teacher Camp will also connect the STEM curriculum to Alabama science and math course of study standards for their grade level during the summer camp experience. The five-day intensive teacher camp serves as preparation for these STEM educators to use their knowledge with real students the following week during the GREAT MINDS Summer Day Camp for local P-12 students. After the successful completion of the GREAT MINDS Summer Day Camp for students, teachers who have participated fully in all aspects of the project will receive a $1,000 stipend for the two weeks of summer professional development, a science or mathematics teaching kit to take back to their classroom, and an Apple iPad to enhance STEM instruction in the classroom. The GREAT MINDS teachers will then continue to host UWA pre-service teachers in their classrooms for demonstration and model lessons as well as field experiences. These same teachers are expected to continue to use the STEM content and methods learned in their P-12 classrooms in the West Alabama region and will be asked to open their classrooms to UWA faculty and students for classroom observations.

**GOAL 2: Develop and Implement STEM Curriculum—Implementation**

The GREAT MINDS Summer Day Camp is a 5-day experience open to 40 students in grades K-2, 40 students in grades 3-5, 40 students in grades 6-8, and 40 students in grades 9-12 for the four summers of the project. Students submit an application to participate in the GREAT MINDS Summer Day Camp. Students must attend a P-12 school in the West Alabama area and be recommended by a local school teacher and an administrator or two teachers. Students are accepted to the GREAT MINDS Summer Day Camp on a first-come, first-served basis so only 40 students per age range per summer are allowed to participate in the camp. Students may attend the GREAT MINDS Summer Day Camp for more than one summer if they meet the application requirements.

GREAT MINDS Summer Day Camp planned sessions are from 8:30 to 12:30 Monday through Friday of the designated camp week for specific age groups (Primary K-2, Intermediate 3-5, Middle School 6-8, and High School 9-12). The students are divided into teams of 5-6 students and work in a learning community with an in-service teacher and UWA undergraduate and graduate students for an intensive hands-on learning experiences. This instruction with a very small student to adult ratio will give students to ask questions, investigate problems and solutions, and work collaboratively to solve problems. This kind of small-group teaching will be beneficial to students who need additional support in STEM areas, literacy, or numeracy.

Students at the UWA-CSI Year 1 GREAT MINDS Day Camp will solve mysteries by developing skills in forensic science, biological science, critical thinking skills, mathematics, and scientific writing. Students at the It’s Not Easy Being GREEN Year 2 GREAT MINDS Day Camp will explore topics such as the Greenhouse Effect, using technology to build schools and homes of the future, creating GREEN spaces in urban and rural communities, the local food movement, and the economics of science. In Year 3, the GREAT MINDS Day Camp will investigate the science of flight using models including paper airplanes, hot air balloons, mag-lev vehicles, virtual flying machines, and mechanized, model airplanes. In the final year of the GREAT MINDS Day Camp, students of all ages will become robotics engineers and learn to manipulate their environments through building a robot. The curriculum of all of the camps will be age-appropriate and include science lab instruction as well as technology integration and mathematical problem solving. By reaching 160 students in the West Alabama service area each summer through the five-day camp experience, the UWA GREAT MINDS project will increase student interest and aptitude in the STEM areas.

The services of all four years GREAT MINDS Summer Day Camp are supported by the science and math kits, probe ware, printers, microscopes (digital and light), digital large format printers, science lab supplies such as beakers, slides, etc., and laptops listed in the budget.

**GOAL 3: Recruitment and Retention of Black American Teachers**

The third goal of the GREAT MINDS project is met by the Transforming Hands-on Ideas into New Knowledge or THINK Teacher Recruiting Program. The recruiting facet of this grant seeks to establish an annual cohort of Black American students (10 per cohort) from our partnership schools across Alabama to be participants in the THINK Teacher Recruiting Program. These students will be recruited through visits to local high schools and through hosted campus visits for prospective THINK students. In addition, the THINK Teacher Recruiting Program will increase enrollment by 10 per year for a total students of 40 students over the life of the grant with 75% continuing to the Teacher Education Program. Once students are on campus as UWA College of Education students, they will participate in service learning projects on the UWA campus and in the Sumter County community. THINK participants are assigned a faculty mentor in the College of Education who advise them in their coursework, offer psychological and personal support to them if they are first-generation college students, and offer advice about being successful in the college environment. The service learning and mentoring portions of the GREAT MINDS grant will allow the UWA faculty team to work with pre-service Black American male and female teachers for all four years of college to insure their success as a STEM educator upon graduation.